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NEWARK PLANT
PIGMENT COLOR RESEARCH REPORT

GE-650-D: SEMI-WORKS AND PLANT DEVELOPMENT
AND STANDARDIZATION.

Period Covered: Semi-Works November, 1945
Plant Oct., 1945 - April, 1946.

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NEWARK PLANT

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Final Report

Title: GE-650-D: SEMI-WORKS AND PLANT DEVELOPMENT AND STANDARDIZATION.

Period Covered: Semi-Works November, 1945
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SUBMITTED BY: E. J. Hess E. J. Hess DATE SUBMITTED: 7/24/46

APPROVED BY: J. G. Morrison J. G. Morrison 11/25/46 DATE ISSUED: 11/27/46

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The new standard procedure, K-2293, differs from the laboratory formula, K-2219, as follows:

1. A very slight increase in the Brilliant Green B - Thioflavine dye ratio is used to give a very slightly bluer PMA toner.
2. The PMA complex and dye volumes in the PMA toner are increased by 15% to conform to those used in GE-599-D. This apparently helped to eliminate definite tendencies toward weakness and dullness of tint.
3. The sodium molybdate solution is stirred at least one-half hour during the pH adjustment in order to insure equilibrium. This change has given a definitely stronger PMA toner and a somewhat stronger and bluer lake.
4. The PMA toner is vat washed (2 waters) before extending. This also has been used in GE-599-D to give a more duplicable product.
5. The batch size is cut 12% to fit available equipment. The PMA complex vat (Vat 309) is the limiting factor; as soon as a projected larger replacement for this small vat is available it will be possible to revert to the original K-2219 batch size. An even greater increase in batch would also be possible and should be considered when the new vat is installed.

EXPERIMENTAL DETAILS

Semi-Works and Plant - DSN-46-25.

GLOSSARY

GE-650-D: An extended color containing approximately 6 1/2% of a PMA toner of Brilliant Green B and Thioflavine TCN in a ratio of 1.8 to 1. The extender is a mixture of Clay, Blanc fixe, and "Ti-Pure" FF in a ratio of 8.8 - 1.7 - 1.0. About 2% of "Lithosol" yellow GPI is also used to obtain the desired shade.

GE-599-D: Similar to GE-650-D except that the colored pigment content is cut to 5.8% of the PMA toner and 1.6% of the "Lithosol" yellow GPI.

PMA : Phosphomolybdic acid complex.

Brilliant Green B: Color Index #662.

Thioflavine TCN: Color Index #815; Schults #934.

"Ti-Pure" FF: Titanium dioxide.

"Lithosol" Yellow GPI: Benzidine yellow - a coupling of Dichlor benzidine tetraso with aceto acetanilid.

INTRODUCTION

K-2219 subsequently coded GE-650-D, was developed in the laboratory at the request of Sales for a green lake, for crayon, stronger than GE599-D.

The laboratory standard was set up at a strength level about 15% above that of GE-599-D, and was acceptable to the customer on this basis. The extra strength was obtained by increasing the toner content (including both the PMA green and the "Lithosol" Yellow GPI) of the GE-599-D type lake by about 15%.

SUMMARY & CONCLUSIONS

After a small amount of laboratory and Semi-Works study this color was taken to the plant for standardization. Some time was spent in straightening out strength difficulties, but finally a standard based on a composite of five plant batches was set up and coded GE-650-D. A rubout compaison of the GE-650-D standard, lot 46950, versus the laboratory standard follows:

Lot 46950 vs K-2219: vs olive - OK - vs dirty: Light stability: equal

A new GE-650-D standard formula, K-2293, based on the procedure used in setting up the new standard was then written and supervision of production was turned over to the plant in April, 1946.

DISCUSSION OF RESULTS:

The single Semi-Works batch made at 1/4 the standard K-2219 batch size was a fairly close check to the laboratory standard.

In the plant, however, considerable difficulty was experienced with maintaining strength in the early work. Of tenbbatches made to check the K-2219 formula only two were satisfactory to ship as GE-650-D when compared with the laboratory standard. The remaining eight batches averaged 11% weak and dirty in tint. Five of these substandard batches were subsequently shipped straight to fill ordersfor the weaker product, GE-599-D.

Based on previous experience with GE-599-D an attempt was made to correct the tinting strength deficiency by vat washing the Green PMA toner before extending. The strength improvement was only minor. One of the four batches made with this modification was shipped straight. The remaining three batches were satisfactory only as GE-599-D.

Experience with increasing the strike concentration on the Green PMA toner in GE-599-D had shown that consistently weak results were obtained with plant trials of three times standard concentration. Although the PMA toner as used in the K-2219 formula had only a 15% increase in concentration over that of the normal GE-599-D type toner it was decided to revert to the exact PMA toner size used in GE-599-D. This necessitated a cut in the GEp650-D batch size of approximately 12% (968# instead of 1100#). A definite quality improvement was noted almost at once; this together with other refinements in the process (see below) have helped to maintain a high OK straight performance on this color.